

REMARKS:

Claims 1-3 and 16-18 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regards as being their invention. The Examiner has indicated that polyisoprene is commonly known in the art as rubber and the applicant's use of a neodymium catalyst to polymerize polyisoprene rubber is known. The Examiner has further indicated that the term neodymium polyisoprene rubber is not shown to have any difference with polyisoprene and that the neodymium descriptor is interpreted as a naming adjective derived from the catalyst. However, the Applicants believe that the term "neodymium polyisoprene rubber" does clearly and unambiguously define the type of polyisoprene rubber called for in the practice of the invention now being claimed. The Examiner is correct in that the "neodymium polyisoprene rubber" called for in claims 1 and 16 is made with a neodymium catalyst system. This is why is it depicted as neodymium polyisoprene rubber. However, it is unique and different from natural rubber (which is another type of polyisoprene rubber) and synthetic polyisoprene rubber that is made utilizing other types of catalyst systems, such as lithium catalysts or titanium catalysts.

The term "neodymium polyisoprene rubber" as used in the claims must be interpreted in light of the teachings of the specification. The specification makes it clear that the term "neodymium polyisoprene rubber" means polyisoprene rubber that was synthesized using a neodymium catalyst. As a composition of matter it differs from other types of polyisoprene rubber, such as natural rubber and synthetic polyisoprene rubber made utilizing different catalyst systems. For instance, unlike natural rubber, neodymium polyisoprene rubber is free of protein. Neodymium polyisoprene rubber (Nd-PI) differs from polyisoprene rubber made with a lithium catalyst (Li-PI) in that it has much easier to process because it is of a lower molecular weight and broader molecular weight distribution. Neodymium polyisoprene rubber differs from polyisoprene rubber made with a titanium catalyst system (Ti-PI) in that it contains a much lower level of catalyst residues and terminating agents. These differences between neodymium polyisoprene rubber and other types of polyisoprene rubber are described in the specification at page 2 line 25 to page 4, line 19.

In summary neodymium polyisoprene rubber is protein free, can be easily processed, and does not contain high levels of catalyst residues. Thus, polyisoprene rubber made with a neodymium catalyst system has a different composition than polyisoprene rubber from different sources. The term "neodymium polyisoprene rubber" as used in the claims of the subject patent application is clear, unambiguous, and does particularly point out and distinctly claim the subject matter that the applicants regard as being their invention. Thus, claim 1 and 16 do meet the requirements of 35 U.S.C. §112, second paragraph. In any case, claim 4 (which was not rejected under 35 U.S.C. §112, second paragraph) has been rewritten in independent form and clearly complies with the requirements of 35 U.S.C. §112, second paragraph.

Claims 1, 2, 16 and 17 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Case (United States Patent 4,405,317) in view of Takeuchi et al (United States Patent 4,433,107). However, the Applicants do not believe that any of the claims pending in the subject patent application are obvious over the collective teachings of Case and Takeuchi. The teachings of Case do disclose a syringe assembly having an actuating plunger. However, the teachings of Case do not disclose or suggest the possibility of manufacturing such actuating plungers with polyisoprene rubber that is synthesized with a neodymium catalyst system. The utilization of such neodymium polyisoprene rubber in manufacturing syringe plunger stoppers is the basis of the invention now being claimed.

The Examiner has combined the teachings of Case with those of Takeuchi. However, the teachings of Takeuchi do not supplement the teachings of Case in a way that renders it obvious to manufacture such syringe plunger stoppers utilizing polyisoprene rubber that is synthesized utilizing a neodymium catalyst system. The teachings of Takeuchi do disclose the synthesis of polyisoprene rubber with a neodymium catalyst system. However, the teachings of Takeuchi do not disclose or suggest that there would be any advantage associated with utilizing polyisoprene rubber that was made with a neodymium catalyst system in making syringe plunger stoppers. In fact, Takeuchi blends such neodymium polyisoprene rubber with another type of rubber and indicates that such blends are useful in industrial goods, such as tires, conveyor belts, hoses, and the like. Takeuchi does not suggest or imply that such compositions would be useful in manufacturing syringe plunger stoppers. In fact, Takeuchi does not indicate that the neodymium polyisoprene rubber would be useful for any

purpose without first being blended with a second rubber, such as natural rubber, other commercially available polyisoprene rubber, styrene-butadiene copolymer rubber, polybutadiene rubber, ethylene-propylene copolymer rubber, ethylene-propylene-diene terpolymer rubber, acrylonitrile-butadiene copolymer rubber, butyl rubber, halogenated butyl rubber, and the like. Accordingly, the teachings of Takeuchi do not provide any motivation for a person having ordinary skill in the to utilize neodymium polyisoprene rubber in manufacturing syringe plunger stoppers. Accordingly, the collective teachings of Case and Takeuchi cannot render the utilization of neodymium polyisoprene rubber in manufacturing syringe plunger stoppers obvious.

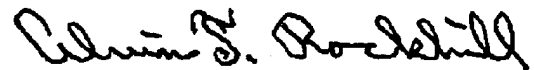
The advantage of utilizing polyisoprene rubber made with a neodymium catalyst system in manufacturing syringe plunger stoppers is the underlying basis of the invention now being claimed. The teachings of Case and Takeuchi do not suggest or imply that there would be any advantage associated with utilizing neodymium polyisoprene rubber in manufacturing syringe plunger stoppers over natural rubber, other types of synthetic rubber, or synthetic polyisoprene rubber made with alternative catalyst systems. The superiority of neodymium polyisoprene rubber over other types of polyisoprene rubber for utilization in manufacturing syringe plunger stoppers is not rendered obvious by the teachings of either Case or Takeuchi if viewed either individually or collectively.

The prior art being cited provides no suggestion or motivation to utilize polyisoprene rubber made with a neodymium catalyst system in syringe plunger stoppers. However, the subject patent application shows the unexpected benefits which are realized by utilizing such neodymium polyisoprene rubber in syringe plunger stoppers. Natural rubber contains naturally occurring proteins which can cause an allergic reaction in humans that come in physical contact with the syringe plunger stoppers or even fluids that come in contact with the syringe plunger stoppers. Furthermore, natural rubber is not typically a pure, clean material that can be utilized in manufacturing syringe plunger stoppers that are clear or transparent. Synthetic polyisoprene rubber that is clean and which has low levels of extractable materials can be made with lithium catalyst systems. However, polyisoprene rubber made with lithium catalyst systems is difficult to process and lacks the physical attributes desired for manufacturing syringe plunger stoppers. On the other hand, synthetic polyisoprene rubber having good physical properties can be synthesized utilizing titanium catalyst systems, but

contain high levels of foreign substances which is, of course, not desirable in manufacturing products like syringe plunger stoppers where a very clean/clear material is desired. It is the applicants' discovery that polyisoprene rubber made with neodymium catalyst systems offers the best of all worlds in terms of possessing outstanding physical characteristics, being clear, clean, and free of proteins.

For the aforementioned reasons, the utilization of neodymium polyisoprene rubber in syringe plunger stoppers as called for in claims 1, 4, and 16 is not rendered obvious by the teachings of Case in view of Takeuchi. Accordingly, all of the claims now pending in the subject patent application are fully in compliance with the requirements of 35 U.S.C. §103(a) and the subject patent application is in a condition for allowance. Such an allowance is respectfully requested.

Respectfully submitted,



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